

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

CLEANUP AND ABATEMENT ORDER NO. 98-724  
FOR  
FMC CORPORATION  
MODESTO SITE  
STANISLAUS COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. FMC Corporation (hereafter Discharger) formerly operated a barium and strontium chemicals processing facility ("Site") at 1200 Barium Road (now Graphics Drive), just east of Highway 99 between Kansas Avenue and Woodland Avenue, in Section 30, T2S, R9E, MDB&M as shown in Attachment "A", which is incorporated herein and made part of this Order. The 43-acre Site, comprised of Assessor's Parcel Number 029-1313-660 is owned by FMC Corporation.
2. The Site is regulated by Waste Discharge Requirements (WDRs) Order No. 87-108 and Cleanup and Abatement (C&A) Order Nos. 93-202 and 96-063 for groundwater remediation, in conformance with Title 27, California Code of Regulations, Division 2, Subdivision 1.
3. Discharge of wastes since 1929, including discharge to seven unlined ponds from the early 1950's to the late 1970s, has resulted in groundwater degradation on-site.
4. This Order requires the Discharger to establish water quality protection standards, continue to implement the groundwater extraction and remediation system installed pursuant to C&A Orders No. 93-202 and 96-063, and select alternatives for soil and/or groundwater cleanup in compliance with State Board Resolution 92-49 and provisions of Title 27 California Code of Regulations (CCR), Division 2, Subdivision 1 in accordance with a time schedule incorporated in this Order.

**GROUNDWATER POLLUTION**

5. The Site has been vacant since 1985 except for the area which was leased for office purposes in 1995, the rehabilitation and use of City of Modesto (City) water supply well No. 56 (formerly FMC water supply production well No. 5) by the City under the terms of a lease, on-going monitoring of on- and off-site monitoring wells under the Monitoring and Reporting Program No. 87-108, as modified on 14 July 1992, and since September 1996, the operation of a groundwater remediation system including extraction wells and a treatment system, with discharge to the City publicly owned treatment works (POTW) under the terms of a permit issued by the City.
6. Groundwater moves from the site towards decommissioned City municipal supply well number 9 (W-9) which is approximately one half mile southeast of the FMC Property.

There are clear concentration gradients of sulfate and TDS in the first semi-confined aquifer, as measured in monitoring wells between the site and W-9. The City Department of Public Works decommissioned W-9 in 1993 for reasons unrelated to potential contamination from the FMC site.

7. The 1997 *Annual Groundwater Sampling and Groundwater Remediation System Operations Report* show results from the July 1997 sampling event for total arsenic, nitrate, sulfide, sulfate, and TDS. Total arsenic in shallow zone wells ranged from nondetect to 0.057 mg/l, with M-104 exceeding the primary maximum contaminant level (MCL) of 0.05 mg/l. Total arsenic in the deep zone ranged from 0.005 to 0.0082 mg/l. Nitrate (as nitrogen) in shallow zone wells ranged from nondetect to 21 mg/l. Nitrate in M-113 exceeded the primary MCL. Nitrate in the deep zone ranged from 0.17 to 4.7 mg/l. Sulfide in shallow zone wells ranged from nondetect to 200 mg/l. Sulfide exceeded background concentrations in six shallow zone monitoring wells, with the highest concentration occurring in MW-104. Sulfide was not detected in the deep zone wells. Sulfate in shallow zone wells ranged from 36 to 2,000 mg/L. Sulfate exceeded the secondary MCL in all but five of the 14 shallow zone monitoring wells. The highest concentration of sulfate occurred off-site in M-115. Sulfate in the deep zone wells ranged from 6 to 100 mg/l. TDS in shallow zone wells ranged from 370 mg/L to 5,100 mg/L. TDS exceeds the secondary MCL in all but two of the 14 shallow zone monitoring wells. TDS in the deep zone wells ranged from 280 to 400 mg/l.
8. The California Department of Health Services has set drinking water standards for TDS at a secondary maximum contaminant level (MCL) of 500 mg/L. The secondary MCL for sulfate is 250 mg/L and the primary MCL for arsenic is 0.05 mg/L. The water quality objective for protection of agricultural supply water is 450 mg/l TDS.
9. The Board's Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin (Third Edition 1994) establishes beneficial uses and water quality objectives to protect those uses. The beneficial uses of groundwater include municipal, domestic, agricultural, and industrial supply. The water quality objectives for groundwater include the state drinking water standards that are incorporated by reference into the Basin Plan (including standards for radioactive constituents), taste and odor, and toxicity.
10. The discharge of waste at the facility has created and threatens to create a condition of pollution or nuisance.

### SOIL POLLUTION

11. Soil sample analyses conducted in August 1990 showed levels of arsenic, sulfate, and electrical conductivity elevated above background in soil from the unlined ponds and levels of nitrate, sulfate, and electrical conductivity elevated above background in soil from the main plant area. Soil sample analyses conducted in September 1992 have shown that on-site soils have been contaminated with elevated concentrations of total arsenic and sulfate and elevated concentrations of leachable barium and strontium (as determined by the waste extraction test).
12. The Discharger submitted an August 1994 *Work Plan to Characterize Soil at FMC Corporation Site* to the Stanislaus County Department of Environmental Resources (SCDER). This plan was approved by the SCDER in March 1995. The Discharger has not yet submitted a report on this investigation. Any further soils investigation and/or remediation shall be conducted under the jurisdiction and oversight of the SCDER, except when the Executive Officer determines that the soils pose a threat to groundwater quality. In such case, further soils investigation and remediation, if necessary, shall be included as part of the activities required by this Order.
13. Regional surface drainage is to San Joaquin River approximately two miles to the south. The beneficial uses of these surface waters are agricultural, and industrial supply; recreation; aesthetic enjoyment; and preservation and enhancement of fish, wildlife and other aquatic resources.

### COMPLIANCE CONSIDERATIONS

14. Section 13304(a) of the California Water Code requires "Any person who has discharged or discharges waste into the waters of this state in violation of any waste discharge requirement or other order or prohibition issued by a regional board or the state board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the regional board, clean up the waste or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including, but not limited to overseeing cleanup and abatement efforts."
15. Section 13304(c)(1) of the California Water Code states that: "...the person or persons who discharged the waste, discharges the waste, or threatened to cause or permit the discharge of the waste within the meaning of subdivision (a), are liable to that government agency to the extent of the reasonable costs actually incurred in cleaning up the waste; abating the effects of the waste, supervising cleanup or abatement activities, or taking other remedial actions..."

16. Section 13267(b)(1) of the California Water Code states "... the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports."
17. State Water Resources Control Board Resolution No. 92-49, amended October 1996, applies policies and procedures to all investigations, and cleanup and abatement activities, for all types of discharges subject to Section 13304 of the Water Code. Paragraph III.F.c. of Resolution 92-49 requires the Regional Water Board to apply "... applicable provisions of Chapter 15 to the extent that it is technologically and economically feasible to do so..." when "... cleanup and abatement involves actions other than removal of the waste, such as containment of waste in soil or groundwater by physical or hydrological barriers to migration (natural or engineered), or in-situ treatment (e.g., chemical or thermal fixation, or bioremediation) ..."
18. Paragraph III.G. of Resolution 92-49 requires the Regional Water Board to "Ensure that dischargers are required to clean up and abate the effects of discharges in a manner that promotes attainment of either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible; in approving any alternative cleanup levels less stringent than background, apply Section 2550.4 of Chapter ... any such alternative cleanup level shall:
  1. Be consistent with maximum benefit to the people of the state;
  2. Not unreasonably affect present and anticipated beneficial use of such water; and
  3. Not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards;"
19. This Order implements (a) the Water Quality Control Plan for the San Joaquin River Basin (5C), Third Edition, approved 9 December 1994, and (b) the prescriptive standards and performance goals of Title 27 CCR, Division 2, Subdivision 1, effective July 1997, and subsequent revisions.
20. The issuance of this Order is an enforcement action taken by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act pursuant to Section 15321(a)(2), Title 14, California Code of Regulations.

21. Any person affected by this action of the Board may petition the State Water Resources Control Board to review the action. The petition must be received by the State Water Resources Control Board within 30 days of the date of this Order. Copies of the law and regulations applicable to filing petitions will be provided upon request.
22. If the Discharger intentionally or negligently violates this Cleanup and Abatement Order, the Discharger may be liable civilly in a monetary amount provided by statute.

**IT IS HEREBY ORDERED** that FMC Corporation, and its agents, assigns and successors, in order to meet the provisions contained in Division 7 of the California Water Code and policies and regulations adopted thereunder, shall:

1. Continue to operate the groundwater extraction and treatment system as approved by the Board using best engineering practices.
2. Notify the Board, within 24 hours, of any breakdown of the entire groundwater remediation system which occurs (or projected to occur) over a 72 hour time period. This notification shall include the cause of the breakdown and the corrective action taken (or proposed to be taken) to restart the system.
3. Notify the Board in writing of any proposed change in ownership or operation of this facility.
4. Notify the succeeding owner or operator in writing of the existence of this Order in the event of any change in ownership of this waste management facility. A copy of that notification shall be sent to the Board within 10 days of any such change in ownership.
5. Complete the tasks below in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
a. Submit results of soil characterization approved by SCDER in March 1995	<b>10 August 1998</b>
b. Submit a Water Quality Protection Standard Report per Section 20390 of Title 27.	<b>8 September 1998</b>
<u>Task</u>	<u>Compliance Date</u>
c. Submit an evaluation of 1) the horizontal and vertical extent of soil and groundwater contamination, 2) the potential impact of soil contamination on water quality,	<b>60 days after Board approval of the Water Quality Protection Standard</b>

3) proposed cleanup goals for soil and/or groundwater, 4) remedial options/economic feasibility for cleanup of soil to prevent impact to water quality and/or to achieve complete capture of the groundwater plume, and 5) selection of alternatives for soil and/or groundwater cleanup.

6. The Discharger shall comply with all applicable provisions of Title 27 CCR that are not specifically referred to in this Order.
7. Reimburse the Central Valley Regional Water Quality Control Board for reasonable costs associated with oversight of all investigation and cleanup activities.
8. The Board will review this Order periodically and will revise these requirements when necessary.

If, in the opinion of the Executive Officer, the Discharger violates this Order, the Executive Officer may issue a complaint for Administrative Civil Liability.

The Order is effective upon the date of signature.

---

GARY M. CARLTON, Executive Officer

---

26 June 1998  
(Date)

PAL